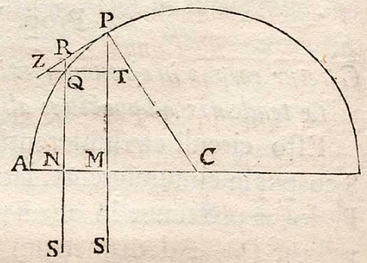
lia in $\frac{SP\ quad.}{QR}$, & punctis P & Q coeuntibus, ſcribatur SP pro RL. Sic fiet $\frac{SP\,qc}{SA\,q}$ æquale $\frac{QT\,q \times SP\,q}{QR}$. Ergo (per Corol. Theor. V.) vis centripeta reciproce eſt ut $\frac{SP\,qc}{SA\,q}$, id eſt (ob datum SA *quad*) ut quadrato-cubus diſtantiæ SP. Quod erat inveniendum.

Prop. VIII. Prob. III.

Moveatur corpus in circulo PQA: ad hunc effectum requiritur lex vis centripetæ tendentis ad punctum adeo longinquum, ut lineæ omnes PS, RS *ad id ductæ, pro parallelis haberi poſſint.*

A circuli centro C agatur ſemidiameter CA parallelas iſtas perpendiculariter ſecans in M & N, & jungantur CP. Ob ſimilia triangula CPM, & TPZ, vel (per Lem. VIII.) TPQ, eſt CPq. ad PMq. ut PQq. vel (per Lem. VII.) PRq. ad QTq. & ex natura circuli rectangulum $QR \times RN + QN$ æquale eſt PR quadrato. Coeuntibus autem punctis P, Q fit $RN + QN$ æqualis $2PM$. Ergo eſt CP *quad.* ad PM *quad.* ut $QR \times 2PM$ ad QT *quad.* adeoq; $\frac{QT\ quad.}{QR}$ æquale $\frac{2PM\,cub.}{CP\ quad.}$, & $\frac{QT\ quad. \times SP\ quad.}{QR}$ æquale $\frac{2PM\,cub. \times SP\ quad.}{CP\ quad.}$. Eſt ergo (per Corol. Theor. V.) vis centripeta reciproce ut $\frac{2PM\,cub. \times SP\ quad.}{CP\ quad.}$ hoc eſt (neglecta ratione determinata $\frac{2SP\ quad.}{CP\ quad.}$) reciproce ut PM *cub.* *Q. E. J.*



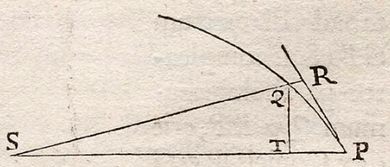
Scho-

Scholium.

Et ſimili argumento corpus movebitur in Ellipſi vel etiam in Hyperbola vel Parabola, vi centripeta quæ ſit reciproce ut cubus ordinatim applicatæ ad centrum virium maxime longinquum tendentis.

Prop. IX. Prob. IV.

Gyretur corpus in ſpirali PQS *ſecante radios omnes* SP, SQ, *&c. in angulo dato: Requiritur lex vis centripetæ tendentis ad centrum ſpiralis.*



Detur angulus indefinite parvus PSQ, & ob datos omnes angulos dabitur ſpecie figura $SPQRT$. Ergo datur ratio $\frac{QT}{RQ}$, eſtq; $\frac{QT\ quad.}{QR}$ ut QT, hoc eſt ut SP. Mutetur jam utcunq; angulus PSQ, & recta QR angulum contactus QPR ſubtendens mutabitur (per Lemma XI.) in duplicata ratione ipſius PR vel QT. Ergo manebit $\frac{QT\ quad.}{QR}$ eadem quæ prius, hoc eſt ut SP. Quare $\frac{QT\,q \times SP\,q}{QR}$ eſt ut SP *cub.* id eſt (per Corol. Theor. V.) vis centripeta ut cubus diſtantiæ SP. *Q. E. J.*

Lemma XII.

Parallelogramma omnia circa datam Ellipſin deſcripta eſſe inter ſe æqualia. Idem intellige de Parallelogrammis in Hyperbola circum diametros ejus deſcriptis.

Conſtat utrumq; ex Conicis.

Prop

SIR ISAAC NEWTON *Philosophiae Naturalis Principia Mathematica* LONDON, 1687 THE WARNOCK LIBRARY Octavo